THE UNIVERSITY OF ALBERTA

CANADIAN EQUIVALENTS OF CERTAIN ITEMS ON THE WECHSLER ADULT INTELLIGENCE SCALE

BY

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KEITH ERNEST OBERLE

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis titled CANADIAN EQUIVALENTS OF CERTAIN ITEMS ON THE WECHSLER ADULT INTELLIGENCE SCALE submitted by KEITH ERNEST OBERLE in partial fulfilment of the requirements for the degree of Master of Education in Counselling Psychology.

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Supervisor

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Date July 25, 1974

ABSTRACT

Fifty-eight letters were mailed to university professors across Canada who might teach the use of the WAIS, to determine whether they feel any items on the WAIS are biased against Canadians, and what, if anything, they do about these items.

From the responses received, three alternate forms of the Information and Picture Completion subtests were developed. Items which seemed biased against Canadians were changed so as to approximate the original items in form and content, except that the content reflected Canadian information rather than American. These forms and the original were adapted to group administration and administered to approximately 370 people with varying age and backgrounds.

Item analysis of the results supported the hypothesis that many, if not most, of the items of apparent American bias are in fact biased against Canadians.

Many items presently being substituted across Canada were found to be inadequate replacements due to their difficulty. Some of these were found to be more difficult for Canadians to answer than the original Wechsler items were.

Possible substitutions for improvement of the WAIS are discussed and recommendations are made in this direction.

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CHAPTER I

Nature of the Problem

Recently in North America there has been a burgeoning concern in the lay community with respect to the use of tests, particularly the use of tests in schools. In Canada this concern has been brought about largely by past abuses which, in some instances, are still being carried on. Attempts to rectify the situation have been made with textbooks and tests being modified to include more Canadian material.

The Wechsler Adult Intelligence Scale (WAIS), developed and standardized in the United States, is gaining increasing usage in Canada, especially with the increased emphasis on adult re-training and diagnosis for special education classes. The question of American content has been raised, particularly with reference to the Information and Picture Completion subtests. How valid a subtest can be for Canadian test subjects when subtests contain items which are largely American in content is questionable. The fact that most Canadian testers change many items on the WAIS bears this out.

A fundamental supposition underlying the Information subtest of the WAIS is the equal opportunity for all subjects to acquire certain information without the benefit of formal education. This basic assumption is not met for Canadians tested on a number of items because of the American nature of the information required to successfully answer the items. A majority of Canadians would not be able

to gain knowledge of such fields as American geography and history other than in school. Canadian schools do not emphasize American history, politics, or geography to the extent that American schools do, providing further bias against Canadians who may be tested on the WAIS and compared to American norms.

Some Canadian psychometricians have attempted to compensate for this bias by substituting "Canadianisms" for the most obviously biased items. Other Canadian psychometricians using or teaching the use of the WAIS say that this cannot be done without violating norming criteria and thus invalidating the test. The question is further complicated by the fact that there is no agreement across Canada as to what items need changing, nor to the changes which should be used. There is therefore a need to see if there is any uniformity in the substitution of Canadian items for American items used across Canada; to provide some empirical evidence to justify changes which have been made without any rationale other than possible false logic; and to suggest, on the basis of empirical evidence, other changes which may bring Canadian usage of the WAIS closer to that intended by Wechsler.

Significance of the Problem

When tests are used as the basis for decisions which could materially influence the direction of peoples lives, it is imperative that the scores obtained on these tests be as accurate as possible. Tests such as the Wechsler Adult Intelligence Scale are often used as a basic screening device when decisions such as whether to place an individual into vocational retraining have to be made. The WAIS is used extensively as an indication of potential to pursue education beyond a

high school level.

The Information subtest is one of the most important scales on the WAIS. Wechsler (1958, p.65) refers to the information items as the "stock in trade" of mental examinations. In developing the WAIS, Wechsler (1958, p.66) indicates that test items were arranged in increasing order of difficulty. Items selected for the Information subtest were chosen from many which were presented in groups of from 25 to 30 items, to groups of subjects of known intelligence. An item was held to be "good" if it showed increasing frequency of success with higher intellectual levels. Studies by Sawatzky and Paterson (1974) and Peters (1960) indicate that many of the items suspected of bias against Canadians are in fact harder for the Canadian subjects than they are for the norming sample, while other apparently non-biased items appeared approximately equal in difficulty for Canadian samples and the American norming population. It would appear on the basis of these studies that bias does exist against Canadians.

The Picture Completion subtest, according to Wechsler (1958, p. 78), is particularly good in testing intelligence at lower levels. It is questionable, however, that this remains true if one-tenth of the items are unduly difficult. Two of the items on this subtest appear to be loaded with American bias. Wechsler also states that the Information subtest was one of the most satisfactory in the battery (1958, p.67). To reduce its validity, when it correlates so highly with the total score, is to bring into question the validity of the final result. Peters (1960) found that the information subtest was generally

difficult and inconsistent with total test performance. Spreen and Tryk (1970) found essentially the same results in a study using the Wechsler Intelligence Scale for Children (WISC).

Any attempt at a total profile analysis using Information and Picture Completion becomes extremely hazardous when several items on these tests are either biased against Canadians, as in the original WAIS, or are substituted primarily on the basis of faith and intuition, as is being done extensively across Canada. Subtest scores, then, could affect an evaluation even if the total I.Q. is not materially changed. Further, one or two items may not on the surface seem significant, but at the extremes may become quite important. Many decisions are made based on a cut-off point, for example, an I.Q. of 75. Two or three raw points here could be very significant.

While face validity is important for psychological testing, it is not a substitute for empirical validity. The previously mentioned studies (Sawatzky & Paterson, 1974; Peters, 1960) indicate that many of the Canadian substitutions in current usage are too difficult for the position they hold on the test. Some of these items were found in fact to be more difficult for Canadians than the American items being replaced. Clearly, some other alternatives must be found for those items, and they need to be empirically checked before they are accepted into common usage.

Another factor which must be considered is the effect of early failure in a sub-test, both on the subject and the examiner. The examiner is usually aware that the items are supposedly arranged in increasing order of difficulty, early items being considerably easier than later ones for a majority of the population. Rosenthal (1966)

outlines several ways by which the experimenter influences test results. One of these he calls the experimenter bias effect, where the expectancies of the experimenter influence the results he finds. This is particularly relevant to a test which depends, to a considerable degree, on the examiner's subjective evaluation.

Several studies (Davis, 1969; Dickstein & Weiss, 1972; and Dunn 1968) indicate that prior failure or failure on early parts of the WAIS influence subsequent performance on later parts of the WAIS.

It appears, then, that considerable variance can be introduced into WAIS results by the combined effects of lowered score because of unduly difficult items, experimenter bias as a result of failure on supposedly easier items, and the effects of early failure on subsequent performance of the examinee.

Statement of the Problem

The purposes of this study is to answer the following questions.

1) What items on the WAIS Information and Picture Completion subtests are biased against Canadians and need changing?

2) What would be reasonable substitutes for those items which require change, in consideration of Wechsler's criteria of difficulty and content?

3) Does the use of the "U.S. items" bias the individual's total score?

4) Are the substitute items already in use in Canada suitable replacements for the original items?

5) How adequate are some new substitutions in replacing those items found to be inappropriate?

The Instrument

The instruments used in this study were four alternative forms of the WAIS Information and Picture Completion subtests, modified for group administration. One form consisted of the original questions posed by Wechsler, while the other three were similar except for substitutions for items which appeared biased. More detailed descriptions of the rationale and design of the instruments occurs in later chapters. Copies of each form are included in the appendix. (Appendix C,D,E)

Limitations of the Study

The limitations of this study revolve around the differences between the procedures used for it and the procedures used by Wechsler in his standardization of the test. Whereas the WAIS was individually administered to a large sample selected from different ethnic, educational and socio-economic backgrounds, the test in this study was group administered to a much smaller sample with a more restricted range of educational and socio-economic backgrounds. In selecting the sample for this study, however, an attempt was made to include groups of subjects who exhibit a fairly wide range of educational, work and life experiences to minimize this difference. No direct attempt was made to match the proportions of the sample by age, socio-economic backgrounds, etc., with the original norming population.

While the above limitations are acknowledged, it is felt that they are not seriously damaging to the value of the study in that the purpose of this study is not to re-standardize the WAIS, but only to determine if there is evidence to suggest that certain items may be unfair, and to evaluate certain substituted items already in use.

Considering the extent and the circumstances of this study, group administration of the instrument was felt to be the most practical means of collecting this information.

Summary

The use of the American intelligence tests in Canada is increasing. The possibility that these tests may not be entirely fair to Canadians has not been thoroughly considered.

The increasing number of decisions affecting students lives, based particularly on such tests as the Wechsler Adult Intelligence Scale, suggests that it is time to investigate the effects of certain items on the test which are apparently biased against Canadian people to whom it is being administered.

The purpose of this study is to determine the present practise with regard to items deemed primarily American in content, what substitutions (if any) are being made for these items, and if the substituted items are approximately equivalent in difficulty with those administered to the norming group.

CHAPTER II

SURVEY OF RELATED LITERATURE

Canadian Equivalents of the WAIS

Very little research dealing with the Canadian content of items on the WAIS could be found. Two unpublished papers dealing directly with Canadian equivalents were located, as well as one published study dealing with substitution of items where the substitutes were taken from the Wechsler - Bellvue I and II. One study of British origin, dealing with British equivalents, was located.

Hopkins (1957), in a study done in Ontario, substituted items from the Wechsler - Bellvue, forms I and II. These items were chosen on the basis of approximate equivalence in difficulty and contribution to total score, but without regard to subject area. Consequently, all questions having to do with politics and geography were eliminated from the subtest as a result of the substitutions. By so doing, it is possible that the representative nature of the test was destroyed.

Robertson and Batcheldor (1956) administered the original items on the WAIS Information scale and the Picture Completion scale, as well as substitutions which they felt were equivalent, to 100 British mental patients. The British subjects found several of the "suspect" items considerably more difficult, while finding many of the substituted items much closer to the level of difficulty found in the original American norming group.

In a study done in Alberta, Sawatzky & Paterson (1974) administered a written questionnaire to 100 first year Education students, age 18 to 19, and to 100 high school students, mostly grade 12, age 16 to

17. The questionnaire consisted of two parts, both of which were administered to the same subjects in the same testing period. Part one consisted of the original WAIS Information test items, while part two contained possible Canadian equivalents for certain items. This study found several of the original items to be biased against Canadian subjects by virtue of their difficulty level, discriminating ability, or both. Some of the substitute items currently in use could be used by Canadian testers with greater confidence as a result of the study, however.

In an unpublished study, Peters studied results of the administration of the WAIS to 200 University of Saskatchewan students in one faculty's first year testing program. The Information subtest was administered with the addition of experimental "Canadianisms" for four of the items. The subjects found three out of the four items easier and more appropriate than the standard items. Three of the four substitutions used were identical to the substitutions used by Sawatzky & Paterson (1974) for those items. However, Sawatzky & Paterson did not find the same items to be more difficult than the original as Peters found.

Group Administration of the WAIS

While the WAIS was designed as a test to be administered individually, several attempts have been made in the past to modify parts of it for group administration, in addition to the Sawatzky & Paterson study previously cited.

Spearman in the 1950's developed a test that he called the VICS, a group-administered short form of the Wechsler - Bellvue II. In

this test he substituted several of the items for some of more Canadian content.

Eme and Walker (1969) attempted to adapt the Information, Similarities, Picture Completion and Digit Symbol subtests for group administration. These subtests were group administered to a sample of 60 students. The same sample was also administered four other subtests by the individual technique as outlined by Wechsler (1955). Total I.Q.'s were prorated from each type of administration and compared. Correlations between the group and individual I.Q.'s were found to be significant beyond the 0.01 level. There were no significant differences between the means of the total group - individual scores. It was concluded by the authors that group administration of parts of the WAIS is feasible.

Tests such as the Picture Completion form part of many group examinations, such as the Army Beta, the Pintner Non-Language, the Haggarty - Delta, the Detroit Kindergarten and the Kellogg - Morton Revised Beta. The Picture Completion test of the Army Beta, group administered, correlates 0.74 with the total score and 0.72 with the Stanford - Binet Mental Age (Wechsler 1958, p. 77).

Effects of Prior Failure on WAIS Results

Dickstein & Weiss (1972) found that failure on one subtest of the WAIS impaired subsequent performance on other subtests. In their study, they purposely created a situation where one subtest was inordinately difficult for the experimental group, and then administered other subtests. Results were compared to a control group.

Dunn, (1968) in a study to determine the effects of stress on WAIS performance found that even as gentle a stress producing situation as the suggestion that a situation is a testing session had an effect on test scores. Significantly different scores (.02 level) between experimental and control groups occurred on the Information scale as a result of this suggestion.

Davis (1969) studied the effects that inordinately difficult items of the Comprehension subtest had on subsequent performance in the Arithmetic subtest. The prior failure experience produced significantly lower Arithmetic scale scores.

Development of the Original Form of the WAIS

The items chosen for use on the WAIS were selected essentially on their statistical merits. Most items were selected from tests already in use at the time Wechsler was developing the WAIS.

For the Information subtest, Wechsler wanted items that would "call for the sort of knowledge that an average individual with average opportunity might be able to acquire for himself" (Wechsler, 1958, p.65). Many items were chosen and administered in groups of from 25 to 30 questions to groups of subjects of known intelligence. An item was held to be "good" if it showed increasing frequency of success with higher intellectual levels (Wechsler, 1958, p. 66).

Items used in the Picture Completion subtest were chosen from the Wechsler - Bellvue I, with additions made to correct the restricted range of the subtest. The pictures used in the W-B I were selected from some 30 to 35 that were tried out over a period of six months with various groups of subjects of known intelligence levels. Each picture was accepted or rejected on the basis of its discriminating ability (Wechsler, 1958,p. 77).

Norming Procedures for the Original WAIS

The WAIS was standardized on 1700 subjects, both sexes, ages 16 - 64. Additionally, geographical location, urban vs. rural residence, color, race, occupation, and educational level were considered in selecting the subjects in an attempt to have the sample representative of the population of the United States as a whole. Sampling was not done randomly, and as a result an unknown amount of bias may have been introduced (Wechsler, 1958, p. 11).

CHAPTER III

METHODOLOGY

To answer the questions posed in Chapter I, instructors who teach the use of the WAIS were surveyed to determine present practise across Canada with respect to substituting items considered unfair. Based on these responses to the survey, the instruments were developed and administered to approximately 370 subjects. Item analysis was employed to compare substituted items with the originals.

Survey of Instructors Who Teach the Use of the WAIS

Letters were mailed (appendix A) to chairmen of all departments of psychology and educational psychology in Canada that were known to offer programs at the graduate level. The chairmen were asked to circulate an enclosed letter to members of their department who teach the use of the WAIS, if any. Fifty-eight letters were mailed.

The purpose of the letters was to determine what changes are made in the administration of the WAIS, if any, and to determine if there is any uniformity across Canada in any substitutions that are made. Fifteen replies were received from the 58 letters sent out (Appendix B). Considering that these letters were not mailed to specific individuals but were mailed to department heads to be passed on to instructors in their department who teach the WAIS, if any, this seemed a reasonable response. There seemed no way of knowing which departments would teach the WAIS, thus the blanket mailing. Responses were received from universities across Canada, from Victoria to Newfoundland.

Recommendations received took several forms. Some respondents listed items that they felt needed changing but gave no suggestions for change; others listed changes currently being used. Two individuals replied that they do not make any substitutions. To do so would violate the original standardization procedures and invalidate the subtest. Accordingly, one of them deletes the subtest altogether. Several expressed a need for a study such as this. There was no real uniformity in the items recommended for change, but some were more consistently commented on than others. The items recommended for change and the number of comments each received in this regard, as well as suggested alternates for the Information subtest are as follows (the numbers in parentheses indicate the number of respondents suggesting that change):

Item 1 What are the colors in the U.S. flag?

a) What are the colors in the Canadian flag? (8)

b) What are the colors in the Union Jack? (1)

Item 6 Name four men who have been presidents of the U.S. since 1900.

a) Name four men who have been Canadian Prime Ministers since 1900. (6)

b) Name three men who have been Canadian Prime Ministers since 1900. (1)

c) Name four seasons of the year. (1)

d) Name two Prime Ministers before Trudeau. (1)

e) No change necessary. (2)

Item 7 Longfellow was a famous man. What was he?

a) What is the color of rubies? (1)

Item 9 In what direction would you travel if you went from Chicago to Panama?

a) In what direction would you travel if you went from Montreal to Panama? (1)

b) In what direction would you travel if you went from Winnipeg to Panama? (1)

c) In what direction would you travel if you went from St. John's to Panama? (1)

d) In what direction would you travel if you went from Ottawa to Panama? (1)

e) What does C.O.D. mean? (1)

f) No change necessary. (2)

Item 11 How tall is the average American woman?

a) How tall is the average Canadian woman? (6)

b) How tall is the average North American woman? (1)

Item 14 When is Washington's birthday?

a) When is Queen Victoria's birthday? (3)

b) When is Dominion Day? (3)

c) When is Labor Day? (1)

d) When is Remembrance Day? (1)

e) When is Victoria Day? (2)

f) What does the heart do? (1)

Item 17 How far is it from New York to Paris?

a) How far is it from London to Halifax? (1)

b) How far is it from New York to Montreal? (1)

c) How far is it from St. John's to London, England? (1)

d) How far is it from Paris to Toronto? (1)

e) How far is it from Montreal to Paris? (1)

f) No change needed. (1)

Item 20 What is the population of the United States?

a) What is the population of Canada? (8)

Item 21 How many members are there in the United States Senate?

a) How many members of parliament are there in the Canadian House of Commons? (5)

b) How many members are there in the Canadian Senate? (2)

c) How many Lieutenant-Governors are there in Canada? (1)

d) How many provinces are there in Canada? (1)

e) What is a harrow? (1)

Two writers commented on the use of the term "state" in item 12 of the Comprehension subtest.

For the Picture Completion subtest, five writers commented that items 11 and 13 were inappropriate but gave no change, one suggested scoring easy at the tester's discretion, one always gives credit for these items, one credits these items if the one immediately following is correct, and two suggested no change is needed.

The Instrument

Based on the responses received to the letter previously mentioned, three forms of the Information and Picture Completion subtests were developed (Appendix C,D,E) in a form suitable to group administration.

In addition, the original items for these two subtests were written in a form suitable for group administration (Appendix F).

Most items used in the alternate forms were selected from suggestions provided by university professors across Canada who instruct in the use of the WAIS. Where there appeared that no suitable suggestions were made, the author invented his own substitutions. In all cases, the items that were selected appeared to test approximately the same content area as the original items did. Wechsler (1958) instructs,

> "Items selected for tests of intelligence, especially those designed for adults, in addition to meeting statistical and empirical criteria, must have common sense appeal, that is, must not be tricky or appear foolish or unfair to the examinee. Inclusion of items in tests which do not meet this requirement have often aroused skepticism toward intelligence tests as a whole. (p. 62)"

In selecting items for substitution, unfamiliar, esoteric and specialized knowledge was avoided.

The wording for the changed items was chosen so as to approximate as closely as possible the style and content of the original items. Answers to items containing geographical or other specific content were verified by one of the following sources: Canada Year Book (1972); Encyclopaedia Canadiana (1972); or Corpus Directory (1973).

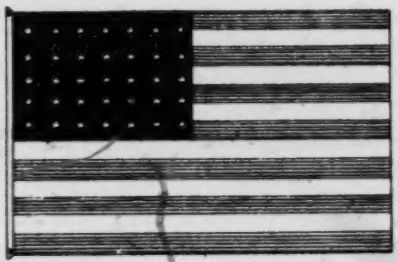
Before duplication and administration of the tests, finished drafts of each of the forms were submitted to two acknowledged experts in the field of adult intelligence testing for validation of the question style and content. The original items in question, the alternates used, and the answers accepted for the Information and Picture Completion subtests, respectively, are as follows:

1. Information Subtest

Item No.	Item	Answer
1)	What are the colors in the American flag?	
	a) What are the colors in the Canadian flag?	red, white
	b) What are the colors in the Union Jack?	red, white and blue
	c) What is Canada's national emblem?	maple leaf, beaver
6)	Name four men who have been presidents of the United States since 1900.	
	a) Name four men who have been Canadian Prime Ministers since 1900.	Any of the following: Laurier, Bordin, Meighan, King, Bennett, St. Laurent, Diefenbaker, Pearson, Trudeau.
	b) Name as many men as you can who have been Canadian Prime Ministers since 1900.	
	c) Name four men who are premiers of Canadian provinces.	Any four existing premiers
9)	In what direction would you travel if you went from Chicago to Panama?	
	a) In what direction would you travel if you went from Montreal to Panama?	S.W....S...S.E.
	b) In what direction would you travel if you went from Winnipeg to Panama?	S.W....S...S.E.
	c) In what direction would you travel if you went from Vancouver to St. John's?	N.E....E...S.E.

11)	How tall is the average American woman?	
	a) How tall is the average Canadian woman?	Any answer from 5'3" to 5'6" inclusive
	b) Same as (a) above	
	c)	
14)	When is Washington's birthday?	
	a) When is Queen Victoria's birthday?	May 24
	b) When is Canada Day?	July 1
	c) When is Remembrance Day?	November 11
17)	How far is it from Paris to New York?	
	a) How far is it from Paris to Montreal?	3000 to 4000 mi.
	b) How far is it from Vancouver to Montreal?	2200 to 3200 mi.
	c) How far is it from London, England to Halifax?	2200 to 3200 mi.
20)	What is the population of the United States?	
	a) What is the population of Canada?	Current estimate ±20% - 18-26 million.
	b) What is the population of Montreal?	2.0 - 3.6 million
21)	How many senators are there in the United States Senate?	
	a) How many members of parliament are there in the Canadian House of Commons?	265
	b) Name the two houses in Canada's Parliament.	Commons, Senate.

2. Picture Completion Subtest

Item No.	Item	Answer
11		number of stars
a)		price
b)		side stripes
c)		stem of leaf

13

a)

Any two Great Lakes

b)

Hudson's & James Bay
or Hudson's Bay

c)

Maritime Provinces
or naming any two of
the missing maritime
provinces.

Nature of the Sample

Approximately three hundred and seventy-five people were included in the sample. Their ages ranged from 15 years to 53 years. Table 1 following provides a percentage breakdown of the sample age according to the age groupings as used by Wechsler (Manual, 1955, p. 78-97)/

TABLE 1

Percentage of Sample By Age Categories

(Percentages Approximate)

Under 16	16-17	18-19	20-24	25-34	35-44	45-54	No age given
2.4	19.3	13.4	26.5	22.3	9.8	3.3	2.0

Approximately 68 subjects were obtained from two undergraduate classes at the University of Alberta, 85 from M.E. Lazerte high school, and 221 from Alberta Vocational Centre. Approximately one-half of the AVC subjects had completed less than a grade 9 educational level.

Informational data provided on the questionnaire indicates a wide range of educational, vocational, socio-economic and cultural backgrounds. No attempt was made beyond this to obtain a stratified random sample which would be exactly representative of Edmonton or Alberta populations. Educational level ranged from approximately a grade three level for some of the adult students at Alberta Vocational Centre, to an undergraduate level at the University of Alberta. Many of the subjects had come from predominantly rural areas. Most had had some (and many had considerable) work experience. Included in the

sample were individuals of native Indian origin, as well as a few foreign students and recently-landed immigrants. All subjects could read in the English language.

In selecting the sample, a fairly wide range of intellectual levels was taken. Particular attention to stratification was not given as it was felt that the basic questions under consideration (ie., the American bias of certain items) would not be biased toward any particular group.

Administration Procedures

Administration of the tests, as previously noted elsewhere, was by group procedure. Each of the class - size groups (varying in numbers from about 10 to 50 students per class) were given some explanation as to the nature of the study. The test booklets were arranged randomly prior to distributing them, so that the results received would not be unduly weighted in the direction of any one type or level of student. One group of approximately 25 students was administered the test prior to any of the others in order to clear any administrative problems and to provide an estimate of time required to complete the exercise. It was intended that subjects receive sufficient time to answer all of the items to avoid statistical problems in interpretation of the results. Time required varied with the reading ability of the groups, testing time being anywhere from 20 to 45 minutes.

In addition to the written instructions subjects were advised that some questions might seem ridiculously easy, but that honest attempts at these questions were required. Also, they were informed partial answers to some questions would be beneficial to the study,

and were requested to attempt to answer each question to the best of their ability.

Scoring

All scoring was done by the author to maintain consistency in scoring procedure. Certain deviations from the standard scoring procedure were found necessary, due to the group administration. Temperature values in question 23 were accepted as correct if the numerical value was correctly given but the scale unspecified. This change was felt necessary since an individual administration the examiner is allowed to ask, "what scale?' (Manual, 1955, p. 35). All picture completion items where more than one response was given was credited as correct if one of the responses was correct. In individual administration, the examiner is able to direct the examinee with "yes, but what is the most important thing missing?" (Manual, 1955, p. 45). As this was not possible with group administration, the above procedure was felt necessary.

In the group administration of the picture completion scale, subjects were allowed to draw in the missing part if they could not name it. This appears to be in accordance with the standard procedure of allowing credit for description of the correct feature or pointing to the missing part.

Statistical Analysis

To determine whether the substituted items are approximately equal in difficulty to the original items, a simple percentage pass was calculated and compared to the percentage of passes listed by Wechsler (1958, p. 247).

Simple percentage pass is not necessarily indicative of difficulty level, as groups of increasing age may find certain items easier than their younger counterparts. It was therefore necessary to rank the items in order of difficulty and to compare these rankings with the placement in the original test (Wechsler, 1958, p. 247).

Discrimination ability of each item was determined by calculating a biserial correlation of the item with the total subtest score. (Stanley, 1964, p. 103). As this procedure was also used with the original form, it was possible to compare the discriminating ability of the original items with their replacements.

CHAPTER IV

RESULTS AND CONCLUSIONS

Test Analysis and Recommendations

Item analysis on each of the four forms of the two subtests has provided difficulty level and discrimination statistics by which comparisons between alternate item forms can be made. Table 2 lists difficulty level and biserial correlations for each item of each form of the information subtest. Test 1 is the original form given to Canadians. Tests 2, 3 and 4 are modified forms. The last column lists the difficulty levels of the original standardization (Wechsler, 1958, p. 247). Table 3 provides the same information for the Picture Completion subtest.

As previously mentioned difficulty level may not be sufficient in some circumstances. Tables 4 and 5 list the questionable items and their rank as determined by percentage pass.

A comparison of each item with possible alternates for difficulty, discrimination and rank follows:

Information Subtest

Original - Item 1 - "What are the colors in the American flag?"

Alternate: 1. "What are the colors in the Canadian flag?"

2. "What are the colors in the Union Jack?"

3. "What is Canada's national emblem?"

Alternate item 1 is the easiest but alternate 2 discriminates best. All three alternates are more difficult than the original item was with the original norming population. However, all three are

TABLE 2

DIFFICULTY LEVELS AND BISERIAL CORRELATIONS - INFORMATION

Item No.	Test 1		Test 2		Test 3		Test 4		Original
	diff.	Bis. r	diff.	Bis. r	diff.	Bis. r	diff.	Bis. r	diff.
*1	0.817	0.388	0.900	0.544	0.885	0.685	0.824	0.488	1.00
2	1.00	0	1.0	0	1.0	0	.989	.188	1.00
3	0.968	0.651	1.0	0	1.0	0	.989	.698	0.99
4	0.957	0.308	1.0	0	0.979	0.519	.978	.676	0.98
5	0.849	0.614	0.844	0.377	0.885	0.458	.912	.149	.91
*6	0.462	0.801	0.233	0.710	0.550	0.610	.121	.668	.86
7	0.720	0.778	0.711	0.693	0.667	0.724	.659	.559	.86
8	.882	.488	.856	.431	.917	.665	.846	.621	.85
*9	.720	.845	.822	.679	.781	.597	.879	.773	.75
10	.742	.850	.789	.709	.802	.775	.758	.784	.74
*11	.602	.362	.767	.217	.760	.404	.703	.267	.70
12	.656	.716	.689	.544	.719	.557	.703	.686	.57
13	.742	.752	.800	.425	.729	.705	.747	.529	.56
*14	.065	.577	.300	.498	.615	.487	.582	.427	.61
15	.742	.787	.800	.708	.719	.774	.714	.755	.53
16	.398	.782	.433	.795	.469	.67	.407	.838	.48
*17	.140	.526	.211	.598	.177	.582	.231	.594	.38
18	.366	.675	.389	.715	.396	.763	.341	.573	.36
19	.355	.765	.367	.783	.365	.714	.330	.595	.34
*20	.161	.503	.489	.647	.260	.782	.165	.603	.29
*21	.032	0.090	.089	.659	.094	.775	.055	.552	.29
22	.258	.690	.256	.628	.313	.652	.352	.644	.28
23	.366	.526	.433	.654	.417	.649	.319	.674	.24
24	.161	.862	.244	.932	.271	.879	.176	.880	.21
25	.226	.704	.178	.685	.198	.765	.165	.623	.16
26	.097	.768	.111	.757	.135	.982	.077	.980	.15
27	.043	.752	.022	.751	.031	.724	.066	.800	.09
28	.075	.597	.089	.794	.063	.641	.077	.861	.03
29	.022	.821	.022	.751	.021	.942	.044	.877	.01

* biased items

TABLE 3

DIFFICULTY LEVELS AND BISERIAL CORRELATIONS - PICTURE COMPLETION

Item No.	Test 1		Test 2		Test 3		Test 4		Original
	diff.	Bis. r	diff.	Bis. r	diff.	Bis. r	diff.	Bis. r	diff.
1	1.00	0	0.989	1.091	0.969	0.795	1.00	0	0.98
2	1.00	0	0.968	0.583	0.969	0.670	1.00	0	0.95
3	.967	0.058	.989	0.140	.979	.667	.945	.239	.91
4	.889	.612	.871	.679	.917	.030	.890	.547	.78
5	.900	.392	.871	.755	.896	.534	.945	.494	.76
6	.800	.533	.839	.588	.896	.324	.890	.566	.70
7	.822	.424	.860	.668	.844	.580	.846	.508	.69
8	.767	.559	.720	.562	.792	.673	.692	.604	.64
9	.778	.749	.753	.435	.760	.745	.703	.722	.63
10	.533	.722	.559	.731	.573	.684	.648	.304	.63
*11	.422	.687	.656	.389	.625	.634	.637	.731	.57
12	.644	.639	.656	.561	.740	.699	.648	.457	.55
*13	.189	.539	.215	.445	.146	.425	.330	.354	.54
14	.511	.671	.505	.419	.479	.558	.409	.418	.51
15	.744	.772	.817	.417	.771	.535	.736	.607	.49
16	.533	.693	.753	.576	.677	.739	.714	.635	.48
17	.756	.807	.699	.538	.677	.552	.648	.448	.46
18	.711	.824	.699	.885	.750	.947	.769	.611	.42
19	.444	.626	.527	.759	.490	.589	.505	.563	.42
20	.311	.652	.312	.648	.302	.628	.198	.588	.23
21	.456	.586	.495	.361	.448	.659	.341	.606	.22

* biased items

TABLE 4

DIFFICULTY LEVELS AND RANK OF SELECTED ITEMS - INFORMATION SUBTEST

	RANK			
Item No.	Test 1	Test 2	Test 3	Test 4
1	6	4	6	7
6	14	22	15	24
9	12	7	8	5
11	13	11	9	12
14	26	19	14	14
17	23	23	25	20
20	22	14	22	23
21	28	27	26	28

TABLE 5

DIFFICULTY LEVELS AND RANK OF SELECTED ITEMS - PICTURE COMPLETION

	RANK			
Item No.	Test 1	Test 2	Test 3	Test 4
11	15	19	15	15
13	21	21	21	20

easier and discriminate better than the original item does with the Canadian sample. Alternative 1 appears to be the most logical substitute and will likely improve with respect to both difficulty level and discriminating ability when the Canadian flag has been in existence for a longer period of time.

Original - Item 6 - "Name four men...presidents. 1900."

Alternate: 1. "Name four men...prime ministers...1900."

2. "Name as many men as you can ...prime ministers..."

3. "Name four men...provincial premiers...1900."

Alternate 2 was originally scored correct if three prime ministers were named correctly. The difficulty was such that all three alternatives were much too difficult. Alternate 2 was the easiest, with a difficulty level of 0.55, as compared to the difficulty of 0.86 for the original item with the original population. It ranked as difficult as the original item with the Canadian sample. The rank of 14 compares to a rank of 6 for the original item in its original standardization. The item was therefore re-scored. Two prime ministers since 1900 correctly named was accepted. This produced a difficulty level of 0.76 and a rank of 9. This is still too difficult, but would be a better alternative than to continue using the original item.

Original - Item 9 "In what direction...Chicago to Panama?"

Alternate: 1. "In what direction...Montreal to Panama?"

2. "In what direction...Winnipeg to Panama?"

3. "In what direction...Vancouver to St. Johns?"

The original item was found to have a difficulty level of 0.72 as compared to 0.75 with the original standardization. It ranked twelfth as compared to ninth, indicating it is somewhat too difficult.

Alternative 2, with a difficulty of 0.78 and a rank of 8 would seem to be a suitable substitute.

Original - Item 11 - "How tall...American woman?"

Alternate: 1,2,3 - "How tall...Canadian woman?

The alternates for this item should logically be equal in difficulty to the original. Items analysis proved otherwise, however. All three groups of Canadians answering the alternate item scored higher than the Canadian group writing the original test on this item. Perhaps Canadians do react negatively to American influence. The correction seems a suitable substitute, as the difficulty level (0.743 average) and rank (11, average) are close to the original (rank 11, difficulty .70)

Original - Item 14 - "When is Washington's birthday?"

Alternate: 1. "When is Queen Victoria's birthday?"

2. "When is Canada Day?"

3. "When is Remembrance Day?"

The original item was found to have a difficulty of 0.065 as compared to the Wechsler group rating of 0.61. Alternates 2 and 3 appear to be equally suitable substitutes, having difficulty levels of 0.61 and 0.58 respectively. They discriminate approximately equally. In addition, they rank 14th in their respective groups, equal to the placement of the original item in its standardization.

Original - Item 17 - "How far is it from Paris to New York?"

Alternate: 1. "How far...Montreal to Paris?"

2. "How far...London to Halifax?"

3. "How far...Montreal to Vancouver?"

Alternate 3 seems to be the best choice for substitution. It's difficulty level (0.231) is somewhat too difficult compared to the original (0.38) but is the easiest of the three alternates. In addition, it discriminates best. Its rank is 19th as compared to 17th for the original standardization for this item.

Original - Item 20 - "What is the population of the United States?'

Alternate: 1. "What is the population of Canada?"

2. "What is the population of Montreal?"

The original item, having a rank of 22 and a difficulty of 0.161, is somewhat too difficult as compared with the norming difficulty of 0.29 and rank of 20. The second alternative, using the limits of the population elsewhere described would be suitable. The limits of Montreal's population are too broad, however, and are therefore inappropriate. They were used because of the wide range in population reported in the previously listed sources. The first alternative, the population of Canada, is too easy when the limits ± 20% as suggested by Wechsler (1958 p.35) are used. The item was therefore re-scored using ± 10% and ± 5% of the current estimate. When answers within 10% of current estimates were used, a difficulty level of 0.38 and a rank of 17 was produced. The 5% limit produced a difficulty of 0.23 and rank of 22. The 10% limit is too easy, and the 5% limit too difficult. The 10% limit seems most reasonable, as it is less than 10 percentage points easier than the standard, and would rank closer to its proper position when all other items are also appropriately placed.

Original - Item 21 - "How many Senators...United States Senate?"

Alternate: 1. "How many members of parliament are there in the Canadian House of Commons?"

2. "Name two houses in Canada's parliament."

Either alternative would be better than the original item, but neither is really acceptable. They are both too difficult. Alternate 2 is the closest to the original in difficulty and discriminates better than either alternates or the original item. It could be used with more confidence than the original until a more suitable substitute is found.

Picture Completion Subtest

Original - Item 11 - American flag, stars missing

Alternate: 1. Canadian postage stamps, price missing

2. Canadian flag, stem of Maple Leaf missing

3. Canadian flag, red side stripes missing

All three alternates were found to be approximately equal in difficulty and in rank within their respective groups. Alternative 2 discriminates best. The difficulty level is approximately equal to that of the original item with the original norming group but ranks 4 places lower. The original item with Canadians is 20% more difficult than with Americans, and ranks 9 places lower. Alternative 2 is therefore a recommended substitute for Canadian people.

Original - Item 13 - Map of United States, Florida tip missing.

Alternate: 1. Canadian map, Hudson's and James Bay missing

2. Canadian map, 3 Great Lakes missing

3. Canadian map, maritime provinces missing

The best alternative is the last. It is closest in difficulty and rank to the original with Americans, and is easier than the original with Canadians. All three alternatives are too difficult, however. Alternative 3 could be used until a better alternative is found.

CHAPTER V

SUMMARY, RECOMMENDATIONS AND IMPLICATIONS

Responses received from professors across Canada who instruct students in the use of the WAIS indicate a concern over apparent Canadian bias. They also suggest that there is no consistency in changes which are used, particularly with reference to the Information subtest. Several of these people recommended a study be done to validate many of the items which are presently being substituted in the subtest. As well, many comments were received suggesting two items in the Picture Completion subtest were inappropriate, but once again there is no uniformity in the way in which the problem is dealt with.

Based on the responses received, three alternate forms of the Information and Picture Completion subtests were developed, in addition to the original. The four forms were then adapted for group administration. It is recognized that group administration of the WAIS is not an ideal way to use the test, but time constraints and the nature of the study necessitated this approach. Precedents from the literature for group administration were previously cited. Apparently this can be done without doing a great disservice to the norms. As this study was not using normative data to any great degree, but was primarily interested in comparing group scores on individual items and their alternates, group administration seemed a valid approach.

Approximately 370 persons, ranging in age from 15 years to 53 years of age and representing a wide range of educational, vocational, social and cultural backgrounds, were administered one of the four

forms of the two subtests developed for this purpose. The groups varied in size from about 10 persons to 50 persons in each group. The tests were arranged so as to have a random distribution of each of the forms throughout each group.

Item analysis supported the hypothesis that many, if not most, of the items which were apparently biased against Canadians were in fact much more difficult for the Canadian sample than they were for the original American norming group.

Several of the items which are being substituted across Canada were shown to be inappropriate substitutes in this study. Some of these items appear to be more difficult items than the original American questions.

Some of the suggested new items seem, within the limitations of this study, to be appropriate replacements for some of the biased items.

Considering the number of items found to be biased, on individual's total score could conceivably be affeoted significantly. Due to the fact that each form of the test had a number of inappropriate items, however, the extent to which the total score is affected could not be determined. Combining the best substitutes from each form into a single form could enable this to be determined in the future.

Changing an item to a Canadian form which will be equivalent in content and difficulty level provides certain problems when a culture such as ours is in its formative years. Items which on the surface appear equivalent in fact are not. The Canadian flag, for example, has been in existence for only a few years. Older people who have not kept in touch with this aspect of our life still think that

either the Union Jack or the Red Ensign is the Canadian flag. Also, we have very few holidays of historical significance, and those that we do have have had their names changed recently and are tied to a particular weekend in a given month, which means that the actual date varies from year to year.

The test changes recommended below, then (Table 6), cannot be considered ideal replacements in many cases. They can, however, be used with greater confidence than either the original American form or other previously recommended changes, where they differ from these. They should only be used until the entire WAIS is revised, updated, and renormed for a Canadian population, for it was not only the American items which differed with Canadians. Some of the other items were either too easy or too difficult for the Canadian sample as compared to the original. Many subjects in this sample were able to answer certain questions well beyond the point where they would have been cut off in an individual administration.

Specific Recommendations

1. Test items as listed in Table 6 be substituted for American items.
2. Further study, empirically and clinically, as to the usefulness of each of these changes. Particular attention should be paid to overall differences in means on each subtest as compared to overall means on the original subtests.
3. The entire WAIS should be revised, updated and "Canadianized," and then renormed across Canada.

Implications

On the basis of the items selected for study and the procedures used in this study, there does appear to be bias on certain items of the WAIS when it is used with Canadian subjects. In addition, certain other items appear to be inappropriately placed to be consistent with Wechsler's intent of increasing difficulty and stopping after reaching an apparent level beyond which a subject is not likely to succeed. Profile analysis which based on the Information subtest in particular is risky. This study shows 7 of 29 items to be biased against Canadians as well as others which are inappropriately placed. Individual subjects could conceivably get the last six of these wrong, in which case his scaled score would be materially affected.

In addition to profile analysis difficulty, one can only speculate as to the effect that failure of these items would have on a subject's attitude towards the test, the examiner and therefore future performance on the rest of the test.

Finally, considerable research is done in Canada using the WAIS as a basic instrument upon which to base conclusions. Any of these research findings, based heavily on the Information scale at least, are highly questionable.

TABLE 6

ITEMS RECOMMENDED TO REPLACE ORIGINAL ITEMS - the WAIS

	INFORMATION SUBTEST ITEMS	ANSWERS
1	What are the colors in the Canadian flag?	Red and white
*6	Name two men who have been Canadian Prime Ministers since 1900.	Laurier, Borden, Meighan, King, Bennett, St. Laurent, Diefenbaker, Pearson, Trudeau.
9	In what direction would you travel if you went from Winnipeg to Panama?	S., S.E., S.W.
11	How tall is the average Canadian woman?	5'3" to 5'6" inclusive
14	When is Canada Day?	July 1
17	How far is it from Montreal to Vancouver?	2200 to 3200 mi.
20	What is the population of Canada?	Current estimate ± 10%
*21	Name two houses in Canda's parliament.	Commons, Senate

	PICTURE COMPLETION SUBTEST ITEMS	ANSWERS
11		Stem on Maple Leaf
*13		Maritime provinces, or naming at least 2 of the missing provinces.

* These items are too difficult and in need of further change. They are, however, more appropriate than the original American items for which they are substituted.

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APPENDICES

APPENDIX A

FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY
TELEPHONE (403) 432-5245

THE UNIVERSITY OF ALBERTA
EDMONTON 7, CANADA

January 2, 1974.

Dear Sir:

I am planning a research project involving Canadian item equivalents of the Wechsler Adult Intelligence Scale, for which I will need some information from those who are presently engaged in teaching the use of the WAIS. Would you please pass on the attached letter to the member or members of your department who are so engaged?

I am grateful for whatever co-operation you are able to provide.

Yours truly,

Peter Calder

Peter Calder,
Assistant Professor.

PC:bc
Encl.

FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY
TELEPHONE (403) 432-5245

THE UNIVERSITY OF ALBERTA
EDMONTON 7, CANADA

January 2, 1974.

Dear Sir:

I am presently carrying out a study dealing with the development of "Canadian equivalents" for culturally biased items on the Wheschler Adult Intelligent Scale. I would appreciate it if you could list those items on either the Verbal or the Performance Scale that you feel have an American bias. In addition, I'd appreciate it if you could list any Canadian equivalents that you are in the practise of using or advising your students to use.

I thank you for the co-operation that you might give us.

Sincerely,

Peter Calder

Peter Calder,
Assistant Professor.

PC:bc

APPENDIX B

The University of Manitoba
Winnipeg 19, Manitoba
Canada

Psychological Service Centre
Telephone 474-9222

February 5, 1974

Peter Calder, Ph. D.
Department of Educational Psychology
Faculty of Education
University of Alberta
Edmonton , Alberta
CANADA

Dear Dr. Calder,

I am writing with regards to your letter of January 2, 1974 asking for culturally biased items on the WAIS. Currently I teach intelligence testing at the graduate level and will be happy to send you a list of items I substitute on the WAIS (see enclosed list). I would also be very interested in your results and would appreciate a reprint. Let me know if you need any additional information.

Sincerely,

Michael R. Thomas

Michael R. Thomas, Ph. D.
Assistant Professor

MRT/ amg
Enc.

Information

1. What are the colors in the Canadian Flag?

6. Name two men who were Prime Ministers before Trudeau?

9. In what direction would you travel if you went from Winnipeg to Panama?

11. How tall is the average North American woman?

14. When is Queen Victoria's birthday?

17. How far is it from Paris to Toronto?

20. What is the population of Canada?

21. How many Lieutenant Governors are there in Canada?

Comprehension

12. Why does the Province require people to get a license in order to be married?

Arithmetic

Similarities

Digit Span - no items changed

Picture Completion

11. Flag - always give credit for this item

13. Map - always give credit for this item

Block Design

Picture Arrangement

Object Assembly - no items changed

Mount Saint Vincent University
Halifax, Nova Scotia Telephone 453-4450

January 24, 1974

Professor Peter Calder
Department of Educational Psychology
The University of Alberta
Edmonton, Alberta T6G 2E2

Dear Sir:

A request concerning your research project involving Canadian item equivalents of the WAIS was forwarded to me by the Education Department. I hope the enclosed items, comments, etc. will prove useful. I teach two classes of Psychometrics - one a senior undergraduate class and the other to Masters' students in Education. Your project was discussed by both classes which total 25 in number, and we came up with the enclosed ideas.

Sincerely,

Rosemarie Sampson

SRS/rl

(Sister) Rosemarie Sampson
Assistant Professor
Department of Psychology

Information

Item 1 - change American to Canadian

Item 6 - change Presidents of the United States to Prime Ministers of Canada - (discussion ensued as to whether Canadians were as knowledgeable about their Prime Ministers as Americans were about their Presidents)

Item 7 - this item (Longfellow ...) was discussed. Classes felt that the people in Nova Scotia knew Longfellow because of his poem Evangeline. They questioned as to whether it was known in other parts of Canada

Item 9 - change Chicago to Montreal

Item 11 - change American to Canadian

Item 14 - change Washington's birthday to Dominion Day . A fair number thought Queen Victoria's birthday would be as good.

Item 17 - change Paris to New York to London to Halifax

Item 20 - change United States to Canada

Item 21 - change senators in the United Stages Senate to Members of Parliament (There was considerable debate over this. We had been using when administering the test "members of the senate" but it was found by most to be unanswerable.

Comprehension

Item 12 - change state to province

Picture completion

Nothing you can really do about it but items 11 and 13 present some difficulty, particularly item 11.

MEMORIAL UNIVERSITY OF NEWFOUNDLAND
St. John's, Newfoundland, Canada
A1C 5S7

Counselling Centre

January 17, 1974

Mr. Peter Calder,
Assistant Professor,
Department of Educational Psychology,
The University of Alberta
Edmonton 7, Alberta
Canada

Dear Sir:

In reply to your letter of January 2, 1974, a copy of which was forwarded to me, the following are the items that I change in trying to make the WAIS more culturally relevant.

The Information Test:

Item 1 - What are the colors in the Canadian flag?

Item 6 - Name four men who have been Prime Ministers of Canada since 1900.

Item 9 - (I have not been changing this item despite the fact that a U.S. city, Chicago, is used. Geographically, Chicago should be well-known and should not represent any cultural bias. However, Toronto or Winnipeg might be more appropriate, at least insofar as face validity is concerned.)
The same goes for item 17 - maybe "Montreal" could be used as a substitute for New York.

Item 11 - How tall is the average Canadian woman?

Item 14 - When is Victoria Day? (Victoria Day, May 24, is a reasonably well-known holiday in this province. But this too may be very limited culturally.)

Item 20 - What is the population of Canada?

Item 21 - How many Members of Parliament are there in the Canadian House of Commons?

The Picture Completion Test:

Item 11 - (The answer should be much more obvious to Americans.)

Item 13 - (However, it may be that Canadians are more familiar with the U.S. map than their own!)

... 2

Hope this has been some help. Good luck with your research.

Sincerely yours,

Thomas Sullivan,
Counsellor

TS/ds

WATERFORD HOSPITAL

Psychology Department

P.O. BOX 4810 ST. JOHN'S NFLD. A1C 5T9
OPERATED BY THE WATERFORD HOSPITAL CORPORATION
AREA CODE 709 PHONE 368-6061

23 January 1974

Peter Calder,
Department of Educational Psychology,
University of Alberta,
Edmonton 7, Alberta.

Dear Sir:

Items with an American bias	Canadian equivalents used by us.
Information	
(1) #1	(1) colors in the Union Jack or the Canadian Flag
(2) #6	(2) Prime Ministers of Canada
(3) #9	(3) St. John's to Panama
(4) #11	(4) average Canadian woman
(5) #14	(5) Labor Day
(6) #17	(6) St. John's to London, England
(7) #20	(7) population of Canada
(8) #21	(8) members in House of Commons
Comprehension	
(1) #12	(1) substitute "county" or "government" for "state"

..... 2

MEMORIAL UNIVERSITY OF NEWFOUNDLAND
St. John's, Newfoundland, Canada

Department of Psychology

January 16, 1974.

Dr. Peter Calder,
Department of Educational Psychology,
The University of Alberta,
Edmonton 7, Alberta.

Dear Dr. Calder,

My own practice with the WAIS is to regard the Information subtest as probably culturally biassed and therefore inappropriate for inclusion in scoring. To use substitute items would be to use an unstandardized and unvalidated test. Considering specific items, the flag colours, Washington's birthday, numbers of senators and Presidents items would seem to be culturally baissed, but the question is clearly an empirical one. We may well find that Canadians are as familiar with U.S. Presidents as are Americans, but that the relative difficulty of Hamlet is quite different.

I am forwarding your letter to the psychologists at the psychiatric hospital and to Dr. Charles Preston who is responsible for our assessment course.

Yours sincerely,

David S. Hart

David S. Hart, Ph.D.
Associate Professor.

DSH/bb

Picture Completion

(1) #11	(1) no equivalent used (scored easy at tester's discretion)
(2) #13	(2) no equivalent used (scored easy at tester's discretion)

I hope this information will be of some use to you, and I would be most interested in receiving a copy of your study when completed.

Sincerely,

Bert Edison,
Acting Head.

BE/aw

University of Waterloo

Waterloo, Ontario, Canada
N2L 3G1
Faculty of Arts
Department of Psychology

January 16th, 1974.

Dr. P. Calder,
Assistant Professor,
Faculty of Education,
Department of Educational Psychology,
University of Alberta,
Edmonton 7, Alberta.

Dear Dr. Calder,

In response to your letter of January 2nd, please be advised that the following items on the Weschler Adult Intelligence Scale have, in our opinion, an American bias.

Information Item 1
Information Item 6
Information Item 9
Information Item 11, we merely substitute Canadian for American
Information Item 17
Information Item 20
Information Item 21
Picture completion Item 13.

We do not use any Canadian equivalents for these items, nor do we advise our students to use such, since to do so would be just as invalid as would deleting the items and prorating - we do not have any normative data for the establishment of Canadian equivalents at this point. Accordingly we would be very interested in the outcome of your study and would appreciate your contacting us when it is completed.

Yours sincerely,

R. R. Ross,
Associate Professor.

RRR/dvp

ST. FRANCIS XAVIER UNIVERSITY
ANTIGONISH, NOVA SCOTIA

DEPARTMENT OF PSYCHOLOGY

January 17, 1974

Dr. Peter Caldeer
Assistant Professor
Department of Educational Psychology
University of Alberta
Edmonton, Alberta

Dear Dr. Caldeer:

I received your inquiry of January 2, 1974.

Kindly be informed that no members of this Department are currently using or instructing in the use of "The Wechsler Adult Intelligence Scale."

Sincerely yours,

Ken den Heyer, Ph.D.
Chairman

KdH:amd

UNIVERSITY OF VICTORIA
VICTORIA, BRITISH COLUMBIA
Department of Psychology

11 January, 1973

Peter Calder
Department of Educational Psychology
Faculty of Education
University of Alberta
Edmonton 7, Alberta

Dear Dr. Calder:

Your form letter of 2 January, 1974 has come to my attention, regarding the solicitation of cooperation in establishing Canadian-equivalent items for the WAIS. Unofrtunately, the promised "attached letter' was missing. Thus I do not know how I can be of assistance to you.

Dr. Otfried Spreen and myself have published some preliminary data of this type on the WISC (Can. J. Behav. Sci.), a reprint of which I am enclosing. I, and many of my colleagues here in Victoria, use the Wechsler tests frequently and are interested in seeing some imporvements in these tests for Candaian populations. Please let me know how I can be of assistance.

Please excuse my typing—between a sticky typewriter and my carelessmess, things get messy.

Sincerely,

Ed Tryk

H. Edward Tryk, Ph. D.
Associate Professor

APPENDIX C

NAME: _____ *BIRTHDATE:* _____

AGE: _____ *MARITAL STATUS* _____

SEX: _____ *PLACE OF EXAMINATION* _____

At what occupation have you spent the majority of your working years?

Have you spent the majority of your life in: (circle one)

a) large city b) town c) small town (200-300 people) d) rural

INSTRUCTIONS FOR COMPLETION

Your best attempts to answer the following questions will aid in an attempt to develop an ability test which is more fair to Canadian people than one presently receiving wide-spread use.

The results of this test will in no way affect your present studies or grades. Teachers or instructors will not be given results of individual tests, but could be given overall results if requested.

You will likely find some questions very easy and others difficult. It is not expected that everyone will get all questions right, but please attempt each question. There is no penalty for guessing, and even partial answers may be helpful to the project.

The test is divided into two parts. For part I, answer the questions the best way you can. Part II has special instructions which you will find when you get to part II.

Thank you for your help in this most important project.

TEST 2

Part I

1. What are the colors in the Canadian flag?

2. What is the shape of a ball?

3. How many months are there in a year?

4. What is a thermometer?

5. What does rubber come from?

6. Name four men who have been Canadian Prime Ministers since 1900?

7. Longfellow was a famous man; what was he?

8. How many weeks are there in a year?

9. In what direction would you travel if you went from Montreal to Panama?

10. Where is Brazil?

11. How tall is the average Canadian woman?

12. What is the capital of Italy?

13. Why are dark clothes warmer than light-colored clothes?

14. When is Queen Victoria's Birthday?

15. Who wrote Hamlet?

16. What is the Vatican?

17. How far is it from Montreal to Paris?

18. Where is Egypt?

19. How does yeast cause dough to rise?

20. What is the population of Canada?

21. How many members of parliament are there in the Canadian House of Commons?

22. What is the main theme of the book of Genesis?

23. At what temperature does water boil?

24. Who wrote the Iliad?

25. Name three kinds of blood vessels in the human body.

26. What is the Koran?

27. Who wrote Faust?

28. What is ethnology?

29. What is the Apocrypha?

PART II

INSTRUCTIONS:

The pictures that follow each have an important part missing. Look at each picture and write what is missing in the space beside the picture. If you cannot think of what the missing part is called, use your pen and draw in the missing part to the best of your ability. Artistic talent will not be judged; only the correctness of your answer is important.

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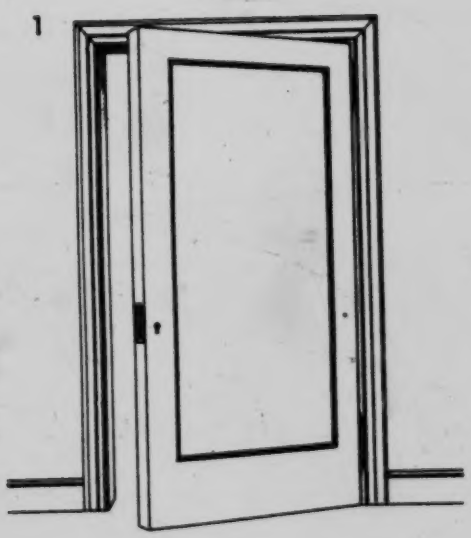

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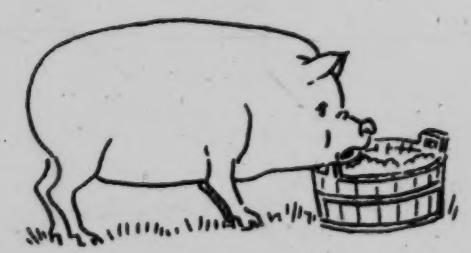

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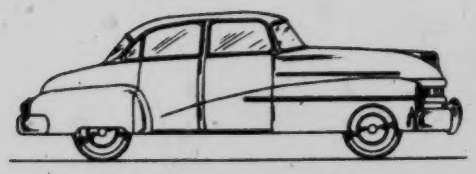

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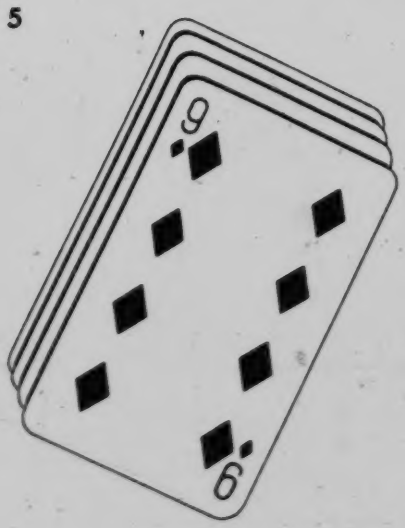

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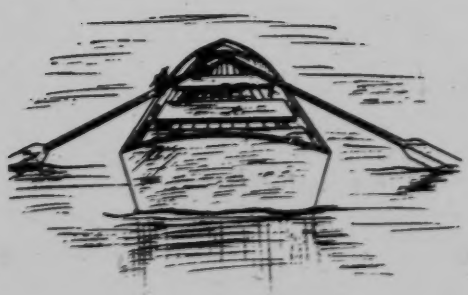

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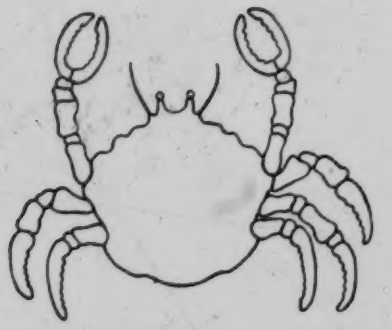

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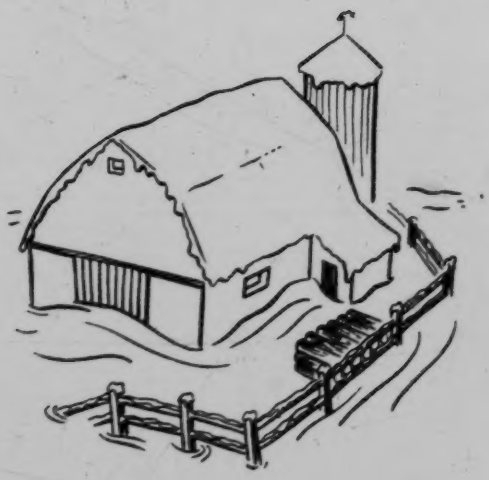

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APPENDIX D

TEST 3

Part I

1. What are the colors in the Union Jack?

2. What is the shape of a ball?

3. How many months are there in a year?

4. What is a thermometer?

5. What does rubber come from?

6. Name as many men as you can who have been Canadian Prime Ministers since 1900.

7. Longfellow was a famous man; what was he?

8. How many weeks are there in a year?

9. In what direction would you travel if you went from Winnipeg to Panama?

10. Where is Brazil?

11. How tall is the average Canadian woman?

12. What is the capital of Italy?

13. Why are dark clothes warmer than light-colored clothes?

14. When is Canada Day?

15. Who wrote Hamlet?

16. What is the Vatican?

17. How far is it from London, England, to Halifax?

18. Where is Egypt?

19. How does yeast cause dough to rise?

20. What is the population of Montreal?

21. Name the two houses in Canada's parliament?

22. What is the main theme of the Book of Genesis?

23. At what temperature does water boil?

24. Who wrote the Iliad?

25. Name three kinds of blood vessels in the human body.

26. What is the Koran?

27. Who wrote Faust?

28. What is ethnology?

29. What is the Apocrypha?

PART II

INSTRUCTIONS:

The pictures that follow each have an important part missing. Look at each picture and write what is missing in the space beside the picture. If you cannot think of what the missing part is called, use your pen and draw in the missing part to the best of your ability. Artistic talent will not be judged; only the correctness of your answer is important.

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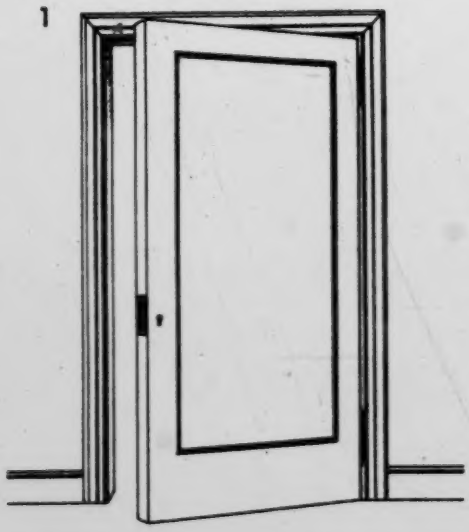

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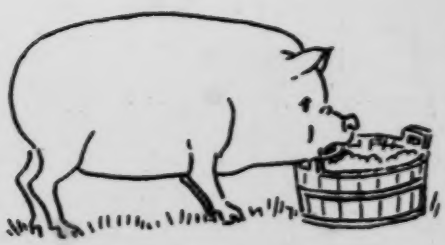

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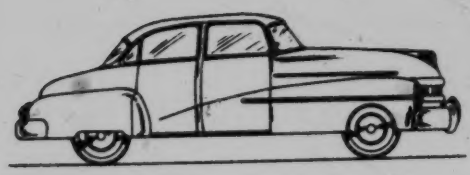

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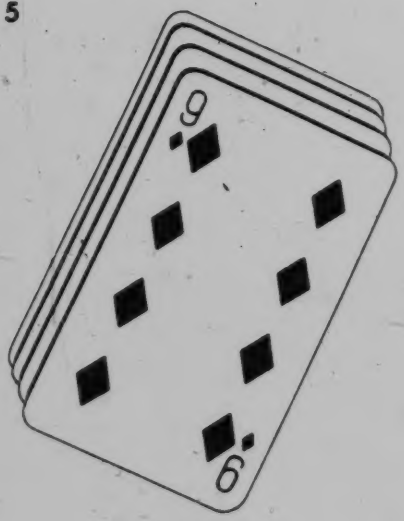

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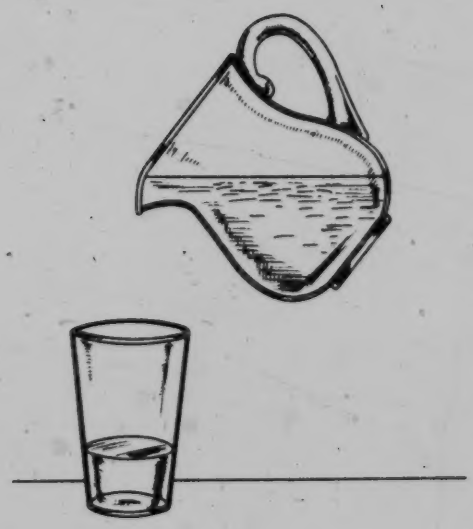

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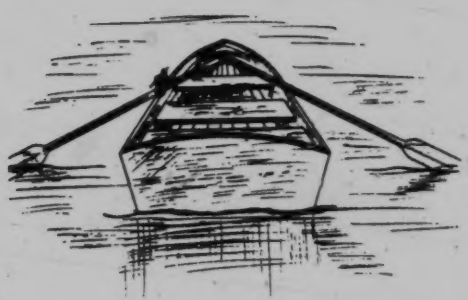

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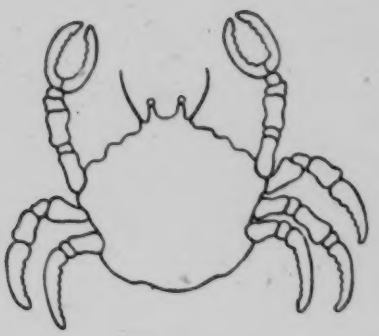

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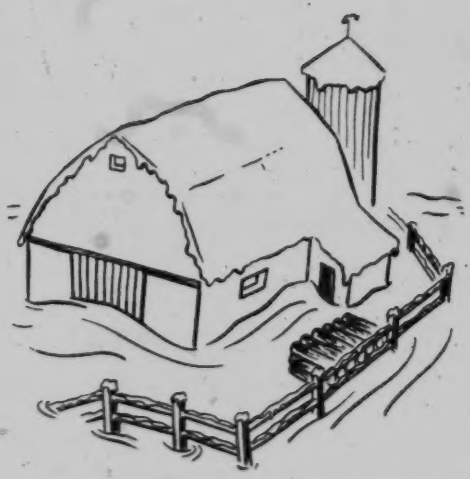

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APPENDIX E

TEST 4

Part I

1. What is Canada's national emblem?

2. What is the shape of a ball?

3. How many months are there in a year?

4. What is a thermometer?

5. What does rubber come from?

6. Name four men who are premiers of Canadian Provinces.

7. Longfellow was a famous man; what was he?

8. How many weeks are there in a year?

9. In what direction would you travel if you went from Vancouver to St. John's?

10. Where is Brazil?

11. How tall is the average Canadian woman?

12. What is the capital of Italy?

13. Why are dark clothes warmer than light-colored clothes?

14. When is Remembrance day?

15. Who wrote Hamlet?

16. What is the Vatican?

17. How far is it from Montreal to Vancouver?

18. Where is Egypt?

19. How does yeast cause dough to rise?

20. What is the population of the United States?

21. How many members of parliament are there in the Canadian House of Commons?

22. What is the main theme of the Book of Genesis?

23. At what temperature does water boil?

24. Who wrote the Iliad?

25. Name three kinds of blood vessels in the human body.

26. What is the Koran?

27. Who wrote Faust?

28. What is ethnology?

29. What is the Apocrypha?

PART II

INSTRUCTIONS:

The pictures that follow each have an important part missing. Look at each picture and write what is missing in the space beside the picture. If you cannot think of what the missing part is called, use your pen and draw in the missing part to the best of your ability. Artistic talent will not be judged; only the correctness of your answer is important.

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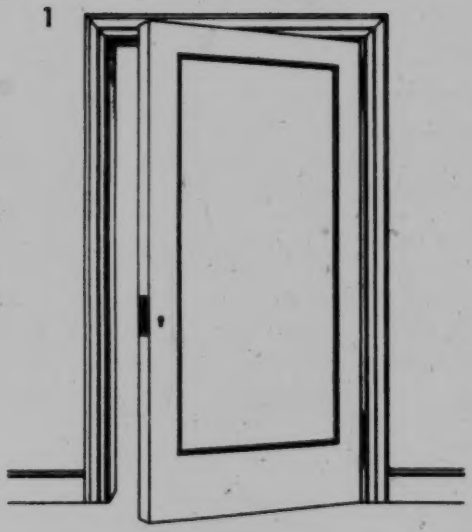

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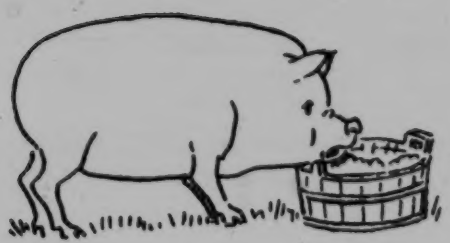

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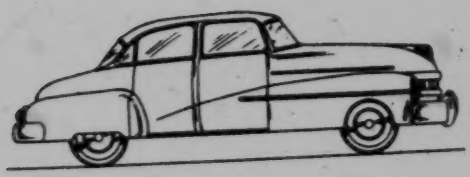

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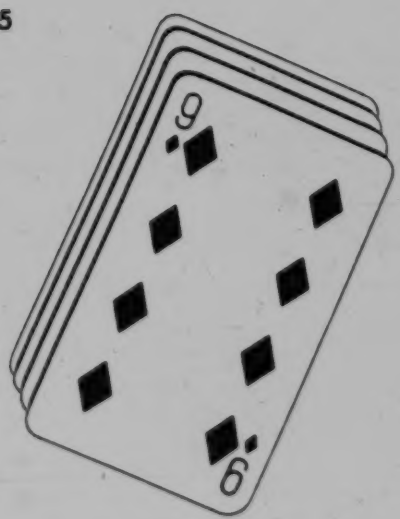

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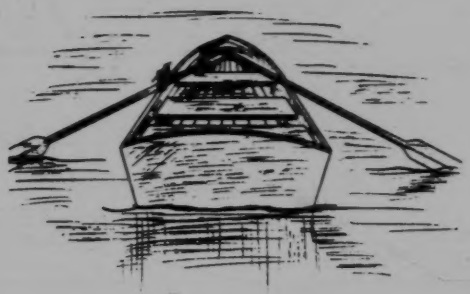

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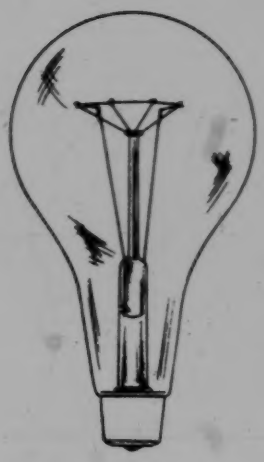

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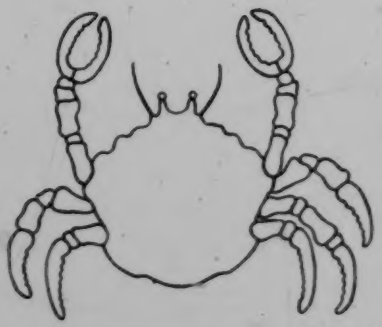

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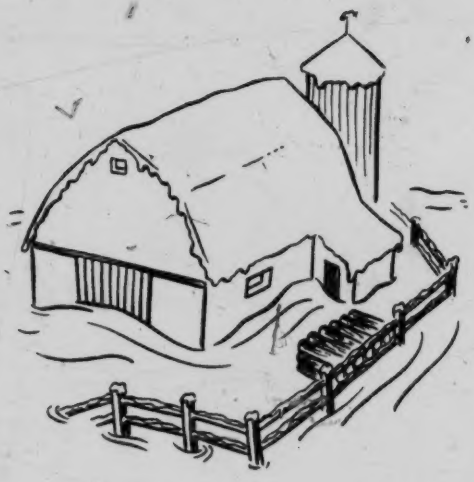

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APPENDIX F

TEST 1

Part 1

1. What are the colors in the American flag?

2. What is the shape of a ball?

3. How many months are there in a year?

4. What is a thermometer?

5. What does rubber come from?

6. Name four men who have been presidents of the United States since 1900.

7. Longfellow was a famous man; what was he?

8. How many weeks are there in a year?

9. In what direction would you travel if you went from Chicago to Panama?

10. Where is Brazil?

11. How tall is the average American woman?

12. What is the capital of Italy?

13. Why are dark clothes warmer than light-colored clothes?

14. When is Washington's birthday?

15. Who wrote Hamlet?

16. What is the Vatican?

17. How far is it from Paris to New York?

18. Where is Egypt?

19. How does yeast cause dough to rise?

20. What is the population of the United States?

21. How many senators are there in the United States Senate?

22. What is the main theme of the Book of Genesis?

23. At what temperature does water boil?

24. Who wrote the Iliad?

25. Name three kinds of blood vessels in the human body.

26. What is the Koran?

27. Who wrote Faust?

28. What is ethnology ?

29. What is the Apocrypha?

PART II

INSTRUCTIONS:

The pictures that follow each have an important part missing. Look at each picture and write what is missing in the space beside the picture. If you cannot think of what the missing part is called, use your pen and draw in the missing part to the best of your ability. Artistic talent will not be judged; only the correctness of your answer is important.

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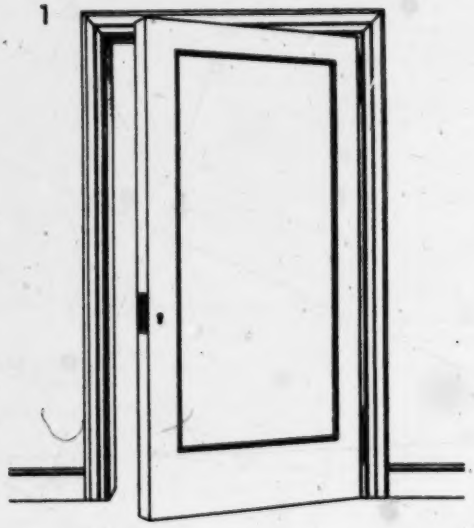

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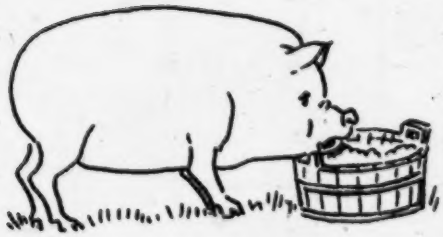

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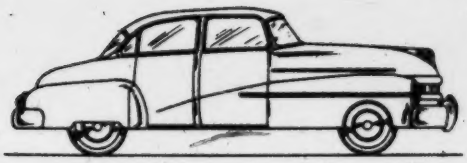

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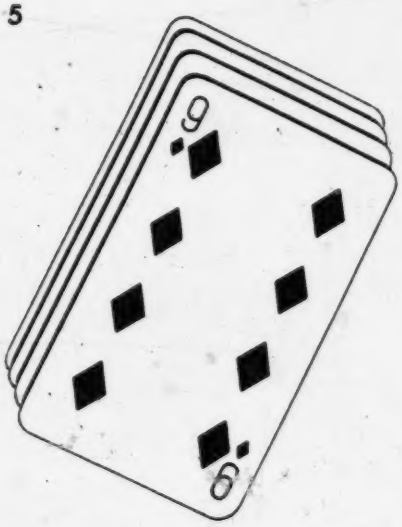

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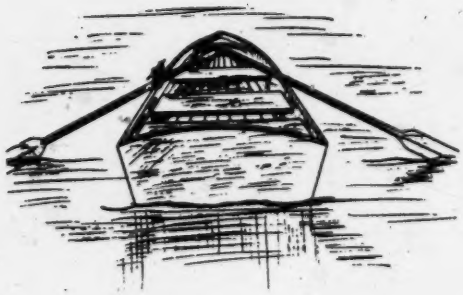

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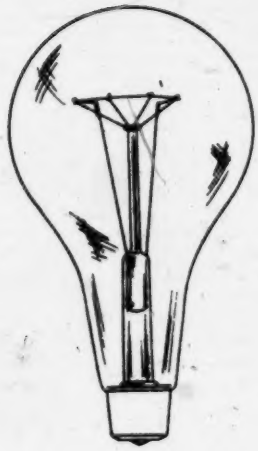

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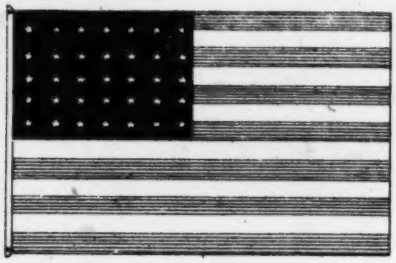

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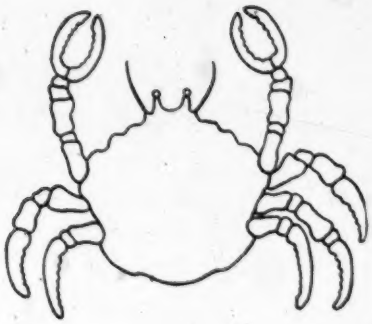

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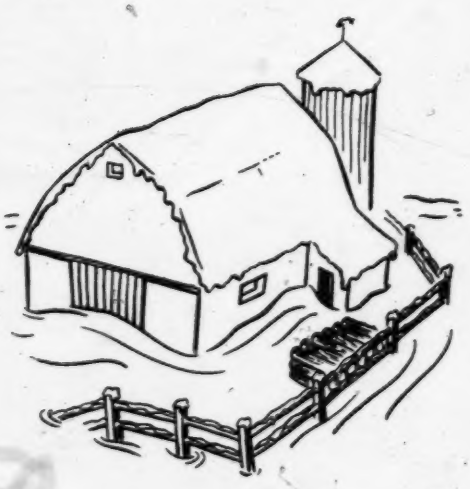

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